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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,658	01/12/2004	Bruno M. LaFontaine	H1540	9304
45305	7590	02/11/2005	EXAMINER	
RENNER, OTTO, BOISSELLE & SKLAR, LLP (AMDS) 1621 EUCLID AVE - 19TH FLOOR CLEVELAND, OH 44115-2191			NGUYEN, HUNG	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/755,658	Applicant(s) LAFONTAINE ET AL.	
	Examiner Hung Henry V Nguyen	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Kozuka et al (JP02001092155 A).

With respect to claim 1, Kozuka et al discloses a method of monitoring flatness of an EUV exposure apparatus and comprising all of the limitations of the instant claim such as: chucking the EUV mask (8) to a chuck (2); scanning the EUV mask (8) with a capacitance probe (21, 22) to generate a first elevation data set for the EUV mask; and generating a first flatness profile using the first elevation data set via a computer (23) (see abstract of Kozuka et al).

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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3. Claims 1 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Dijsseldonk (U.S.Pat. 6,597,434).

With regard to claims 1 and 14, Van Dijsseldonk (figure 1) discloses a system and a corresponding method for monitoring flatness of an extreme ultraviolet lithography mask comprising all basic features of the instant claims such as: a mask platen assembly (100, 110, 130, 140) including a chuck with a mask mounting surface for receiving the EUV mask (MA) and electrostatic ally retaining the EUV mask to the chuck (see col.5, lines 65 thru col.6 line 14); a capacitance probe for scanning the EUV mask to generate elevation data for the EUV mask (see col.6 lines 33-52) and a controller for receiving the elevation data and generating a flatness profile using the elevation data and for controlling the electrostatic clamping forces of the mask assembly (see col. 6, lines 53-64).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi et al (U.S.Pat. 4,66,291).

With respect to claims 1 and 14, Taniguchi discloses an exposure apparatus for monitoring flatness of an soft X-rays (EUV) lithography substrate comprising substantially all elements as recited in the instant claims such as: a platen assembly including a chuck (12) with a

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mounting surface for receiving the EUV substrate (6) and electrostatic ally retaining the substrate to the chuck (see figure 12); a capacitance probe (60) for scanning the substrate to generate elevation data for the substrate and a controller (61) for receiving the elevation data and generating a flatness profile using the elevation data and for controlling the electrostatic clamping forces of the substrate assembly (see col.6, lines 1-12). Although Taniguchi discloses scanning the flatness of the EUV substrate, which may be regarded as an EUV mask in the broadest sense, even if we consider the substrate as being different from a mask. The claimed invention would still not have involved an inventive step. Given a realization that the Taniguchi's device could have been equally used with an EUV mask, it would have been obvious to a skilled artisan to employ the system of Taniguchi to detect the flatness of an EUV mask and thereby improving the quality of the images to be printed.

6. Claims 2-4 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dijsseldonk (U.S.Pat. 6,597,434) in view of Itoh (U.S.Pat. 6,537,844).

With respect to claims 2-4 and 11-16, Van Dijsseldonk discloses a system and a corresponding method of monitoring flatness of an EUV mask and comprising substantially all of the limitations of the instant claims as discussed. Van Dijsseldonk et al does not expressly disclose conducting a second scan of the EUV mask for generating a second flatness profile and comparing the first flatness profile and the second flatness profile for detecting the flatness variations, as recited in the instant claims. However, this in itself does not provide any inventive steps. Itoh discloses a method for measuring flatness of exposure mask substrate and teaches acquiring flatness of mask substrate before chucked and after chucked on mask stage and judging

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flatness of mask substrate based on the obtained first and second information (see col.1, lines 61-67 and col.4, lines 40-51). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Van Dijsseldonk and Itoh to obtain the invention as specified in claims 2-4 and 11-16. It would have been obvious to a skilled artisan to rescan the mask to obtain a second elevation data for the mask. The purpose of doing so would have been to precisely detect the flatness of mask and to improve the quality of the lithography system.

7. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dijsseldonk (U.S.Pat. 6,597,434) in view of Itoh (U.S.Pat. 6,537,844) and further in view of Nakahara et al (U.S.Pat. 5,442,163).

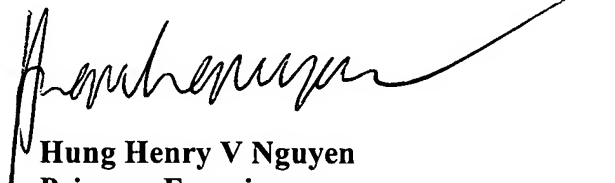
With respect to claims 5-10, Van Dijsseldonk as modified by Itoh lacks to show detecting the contamination of the mask and cleaning the contaminated area. Nakahara et al teaches an exposure apparatus having inspection device for detecting the contaminants on the mask and cleaning means for cleaning the contaminated area on the mask (see claim 5 of Nakahara). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Van Dijsseldonk, Itoh and Nakahara to obtain the invention as specified in claims 5-10. It would have been to check at least one of the mask and the chuck of Van Dijsseldonk as modified by Itoh, for contamination and cleaning the contaminated area, as suggest by Nakahara, thereby improving the flatness of the EUV mask.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hung Henry V Nguyen
Primary Examiner
Art Unit 2851

hvn
2/3/05